May 23, 1969

To: Board of Trustees and Broadcasting Council

From: WMUA Engineering Dept.

There are three recognized means of increasing a station's coverage at the station to an audience. First, by increasing the power input into the antenna system; Second, by modification of the antenna system; Third, by relocation to a more favorable transmitting site. When attempting to improve coverage, the usual practice for a station is to employ a combination of the above (i.e., increase power and relocate antenna, etc.), as stated in the second Kear & Kennedy report, and this is the procedure WMUA hopes to follow.

As stated in the initial Kear & Kennedy study of last August, a 10 watt transmitter, a moderate antenna system, and a favorable antenna site is usually sufficient to cover a campus, but on a campus as large as the University of Massachusetts, the irregular natural and man-made terrain make good coverage very difficult with only 10 watts. (In a research project done for a Speech course at the University, we confirmed our suspicion that our coverage of certain areas, notably Southwest, was less than optimal.) In addition, as of November 1968, 2600 Umass students , with no indication that this figuer is going to remain the same, live off campus, and these commuters frequently complain in the Student Senate that they should not be taxed for WMUA since they cannot receive it well, or not at all.

A frequently voiced concern at the Broadcasting Council would be WMUA's new role as a"regional" station. Just to keep our semantics straight, a regional station is one designated by the FCC to serve an area much larger than the 1-2kw. WMUA wishes could ever do. Such stations employ upwards of 10,000 watts radiated power, such as WFCR. The mountainous terrain of the Pioneer Valley area would act as a natural barrier to restrict WMUA's service to areas beyond approximately 10-15 miles, since FM travels almost entirely by line of sight. Some members of the council even suggested that WMUA return to wired campus operation using AM converters to the dorms and halls! From only an engineering standpoint, the suggetsion is impractical because of the large number of converters needed at UMass. and the maintenance required; the poorer fidelity of AM, and most of the interference produced by elevators and flourescent lighting falls in the AM broadcast band, making good reception very difficult. In addition, we would not be able to serve off campus listening. I trust that the suggestion will be dismissed as being absurd.

The Broadcasting Council suggested that we first try our ten watt facilities at our proposed higher power location (Emily Dickinson) to see if this alone would improve coverage. As Mr. Stadlen has stated previously, this was one of the recommendations of the initial Kear & Kennedy study, but based on subsequent correspondence with the firm , both WMUA and Kear & Kennedy feel that in order to guarantee coverage to campus AND off-campus listeners, a radiated power of 1-2kw. with a circularly polarized antenna from Orchard Hill is necessary. In addition to virtually guaranteeing improved coverage and providing stereo capability (stereo demands a much "cleaner" or stronger signal than for comparable monophonic reception), the immediate changeover to higher power would involve less red tape with the licensee and the FCC, and would be less expensive. In order to move our present 10 watt facilities, it would be necessary to:

1. Revise our present budget for higher power with the Student Senate to include money for relocating our present antenna system.

2. Apply to the FCC and Board of Trustees for permission to relocate the antenna

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If the antenna relocation did not improve coverage, then:

1. We would have to apply to the FCC and Trustees for higher power. This takes considerably longer than merely applying for antenna relocation with the FCC.

2. We would have to dismantle and relocate the 10 antenna and transmitter back on the Engineering Bldg.

3. Most important, with prices increased form this year, we would have to re-submit our budget to the Senate.

The above procedure would not only entail the $1000 or so for relocating the antenna and transmitter, but would also mean extra money for the consulting firm to handle the additional application with the FCC. Also, largely because of the Vietnam war, prices on the equipment would have risen and it is common for manufacturers to make annual price increases up to 20%. For example, the price on our proposed transmitter has risen $200 since April and Ampex Corp. has made a 7% increase on all products this year. QUITE SIMPLY, THE LONGER WE MUST WAIT FOR APPROVAL, THE MORE IT WILL COST as in the case of the Medical School.

There is also the question of stereo. All other things being equal, stereo requires a higher level and higher quality signal delivered to the receiver than for comparable monophonic reception. This simply means more radiated from the transmitter. The acceptance of stereo by broadcasters has been so great that very little monophonic equipment is still available and that which is available is readily convertible to stereo. Sale of stereo receivers has also increased (17% of listeners in the survey mentioned previously had a stereo receiver).

We also take pride in our engineering and note with pride that it is as good as that of most stations in the area. We have for years been performing tests and measurements on equipment not required of Class D 10 watt stations by the FCC. For example, we take transmitter readings every 30 minutes, although FCC 73.583 requires these readings only at sign on and off. We also make regular frequency and modulation measurements; our frequency deviation is 1/30th. the permissable tolerance.

Our desire for higher power is not to become a regional station, a competitor with commercial stations, or for the sake of being a bigger station. Our primary purpose is to "fill in the holes" of our campus coverage AND to reach listeners in the Amherst area, many of whom are students at UMass. While it is true that our signal can be heard in Pelham, it is also true that we do not have adequate coverage of Southwest. Any broadcaster must assume that most listeners have consumer variety sets and very few have expensive, elaborate receivers capable of receiving weak signals well.

Let me say in conclusion that, like most broadcast engineers, I believe in conservative, but not extravagant design practices. As Mr. Smith (K & K) explained, the least complicated and expensive means for UMUA to cover the campus and local surrounding area is with a 4 section circularly polarized antenna fed with approximately 1000 watts located on Orchard Hill; the same arrangement originally proposed by the UMUA Engineering Dept. Although 1000 watts may appear to be a great deal, there are many, many FM stations operating with upwards of 100,000 watts. The logic for higher power in FM is that an FM signal does not travel as far as an AM signal of comparable power. It is for these reasons, and those of the Kear & Kennedy study, that UMUA's request for higher power (2kw ERP) is a modest, reasonable, and adequate request in order to make UMUA's growth commensurate with the growth of the University.

We invite you to inspect our facilities at your convenience.